

A4.12 Sponge communities on lower circalittoral rock

Summary

Detailed information on the abundance and extent of this habitat is lacking however survey information reveals that it has a widespread distribution (e.g. present in the Azores, Cantabrian Sea, off the coast of Northern Ireland, Shetland, and in Sweden). Survey data are available for some locations (both inshore and offshore) but cover relatively small areas (e.g. on the Pobie Bank ridge to the east of Shetland and transects across the Cantabrian shelf). The characteristic species of this habitat (sponges) are sensitive to direct physical disturbance from demersal fishing gear, as well as smothering by suspended sediments which could result from fishing activity, dredge disposal or nearby construction. Climate change may change the composition of species associated with this habitat in the future.

This habitat is present within some Marine Protected Areas and in zones where the use of bottom trawling is prohibited (e.g. on the Cantabrian Shelf). There are some long term monitoring sites (e.g. Isles of Scilly, UK), however no conservation measures that specifically target this habitat have been identified.

Synthesis

This habitat has a large EOO and AOO, and therefore qualifies as Least Concern under criterion B. However the habitat is assessed as Data Deficient both at the EU 28 and EU 28+ levels because of the lack of information on area and any trends in quantity and quality.

Overall Category & Criteria			
EU 28		EU 28+	
Red List Category	Red List Criteria	Red List Category	Red List Criteria
Data Deficient	-	Data Deficient	-

Sub-habitat types that may require further examination

Biotopes characterised by different sponge species may benefit from further examination.

Habitat Type

Code and name

A4.12 Sponge communities on lower circalittoral rock

No characteristic photograph of this habitat currently available.

Habitat description

This habitat type typically occurs on circalittoral rock (commonly below 30m depth) in areas subject to negligible tidal streams. The sponge component is the most striking feature, and can be present in large aggregations. The sponges are important structure components; they contribute to bioerosion, consolidate sediment and stabilise habitats thereby reducing physical disturbance, and through aggressive competitive growth and seasonal retraction maintain space for new recruits and species thus maintaining biodiversity.

A species rich hydroid/bryozoan turf may develop in the understorey of this diverse sponge assemblage. Sponge fields also support various ophiuroids, which use the sponges as elevated perches. The prominent mobile species of the associated community consist mainly of decapod crustaceans, gastropod molluscs and echinoderms. A diverse 'cryptofauna' of nemerteans, polychaetes and amphipods also exists, living within and between the larger sessile organisms, acting as grazers, predators and

detritivores. Fish may also be present, but they are not considered characteristic members of the community.

Indicators of quality:

Both biotic and abiotic indicators have been used to describe marine habitat quality. These include: the presence of characteristic species as well as those which are sensitive to the pressures the habitat may face; water quality parameters; levels of exposure to particular pressure, and more integrated indices which describe habitat structure and function, such as trophic index, or successional stages of development in habitats that have a natural cycle of change over time.

There are no commonly agreed indicators of quality for this habitat, although particular parameters may have been set in certain situations e.g. protected features within Natura 2000 sites, where reference values have been determined and applied on a location-specific basis. Indicators of 'naturalness' have been described for this habitat and may be used to make some assessment of habitat quality. These are; community composition including the presence of older, larger individuals within the community, presence of intact (undamaged) fragile sponges and other fragile epifauna, low levels of silt, filter feeders unsmothered, no increases of silt tolerant species, and presence of typical species.

Characteristic species:

The sponges *Phakellia ventilabrum*, *Axinella infundibuliformis*, *Axinella dissimilis* and *Stelligera stuposa* dominate. Other sponge species frequently found on exposed rocky coasts are also present in low to moderate abundance. These include *Cliona celata*, *Polymastia boletiformis*, *Haliclona viscosa*, *Pachymatisma johnstonia*, *Dysidea fragilis*, *Suberites carnosus*, *Stelligera rigida*, *Hemimycale columella* and *Tethya aurantium*. The cup coral *Caryophyllia smithii* and the anemone *Corynactis viridis* may be locally abundant in some areas, along with the holothurian *Holothuria forskali*. In deeper waters there may be dense aggregations of *Artemisina transiens*. The soft corals *Alcyonium digitatum* and *Alcyonium glomeratum* are frequently observed. The bryozoans *Pentapora foliacea* and *Porella compressa* are also more frequently found in this deep-water habitat type. Bryozoan crusts such as *Parasmittina trispinosa* are also occasionally recorded. Isolated clumps of large hydroids such as *Nemertesia antennina*, *Nemertesia ramosa*, *Sertularella gayi* as *Aglaophenia pluma*, erect bryozoans including *Cellaria sinuosa*, *Bugula flabellata*, *Bugula plumose*, *Bugula turbinata*, *P. foliacea*, *A. diaphanum* may be seen on the tops of boulders and rocky outcrops. Large echinoderms such as *Echinus esculentus*, *Luidia ciliaris*, *Marthasterias glacialis*, *Strichastrella rosea*, *Henricia oculata* and *Aslia lefevrei* may also be present. The sea fan *Eunicella verucosa* may be locally common and the snail *Calliostoma zizyphinum* is often recorded as present.

Classification

EUNIS (v1405):

Level 4. A sub-habitat of 'Atlantic circalittoral rock' (A4.1)

Annex 1:

1170 Reefs

MAES:

Marine - Marine inlets and transitional waters

Marine - Coastal

MSFD:

Shallow sublittoral rock and biogenic reef

EUSeaMap:

Shallow photic rock or biogenic reef

IUCN:

9.2 Subtidal rock and rocky reefs

Does the habitat type present an outstanding example of typical characteristics of one or more biogeographic regions?

Unknown

Justification

There is insufficient information on the characteristics of this habitat (including its associated biotopes) or on its distribution and extent to determine whether it is typical of the North East Atlantic region.

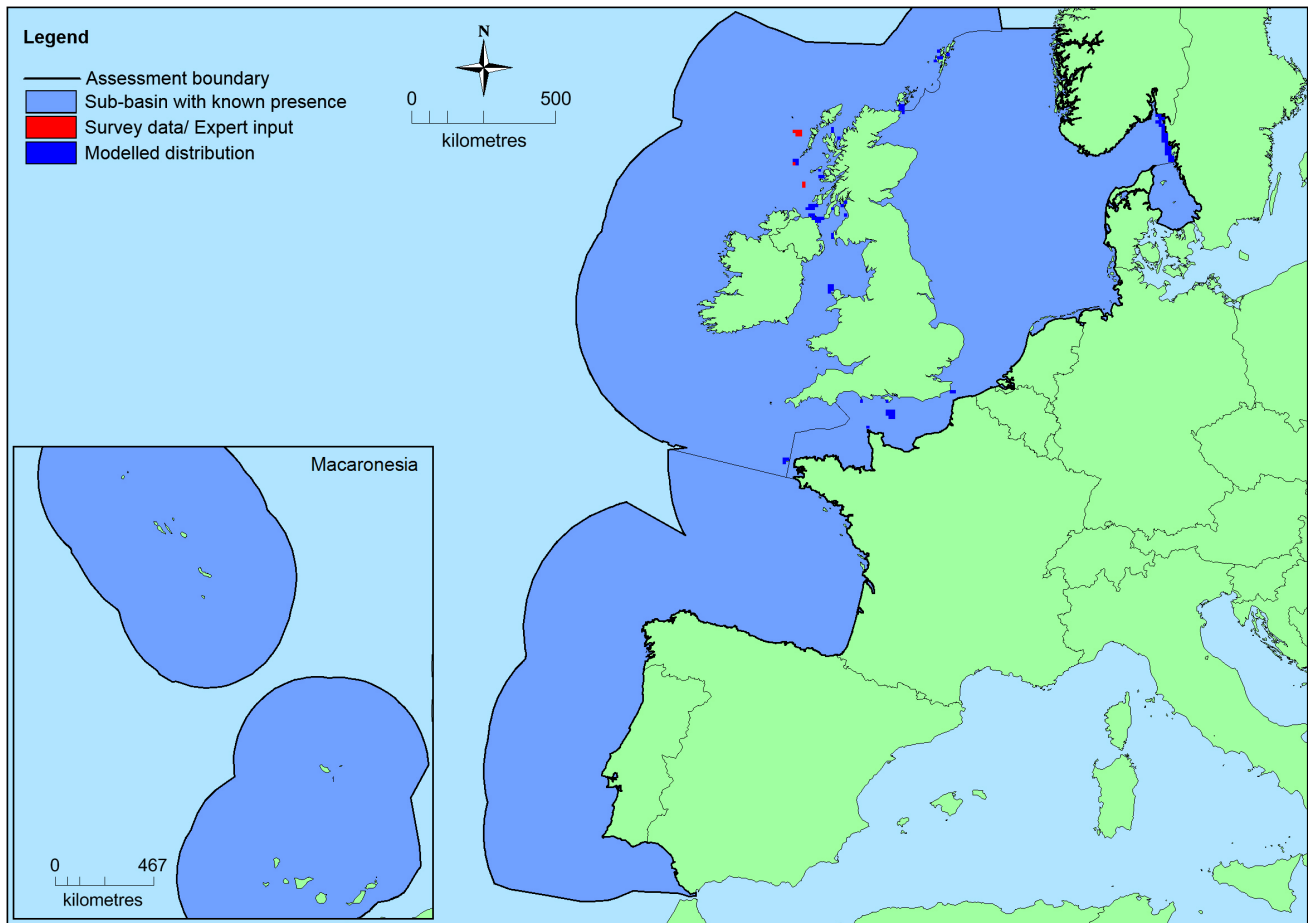
Geographic occurrence and trends

Region	Present or Presence Uncertain	Current area of habitat	Recent trend in quantity (last 50 yrs)	Recent trend in quality (last 50 yrs)
<i>North-East Atlantic</i>	Bay of Biscay and the Iberian Coast: Present Celtic Seas: Present Greater North Sea: Present Macaronesia: Present Kattegat: Present	Unknown Km ²	Unknown	Unknown

Extent of Occurrence, Area of Occupancy and habitat area

	Extent of Occurrence (EOO)	Area of Occupancy (AOO)	Current estimated Total Area	Comment
<i>EU 28</i>	960,699 Km ²	97	Unknown Km ²	EOO and AOO have been calculated on the available data. Although this data set is known to be incomplete the figures exceed the thresholds for threatened status.
<i>EU 28+</i>	>960,699 Km ²	>97	Unknown Km ²	EOO and AOO have been calculated on the available data. Although this data set is known to be incomplete the figures exceed the thresholds for threatened status.

Distribution map



There are insufficient data to provide a comprehensive and accurate map of the distribution of this habitat. This map has been generated using EMODnet data from modelled/surveyed records for the North East Atlantic (and supplemented with expert opinion where applicable) (EMODnet 2010). EOO and AOO have been calculated on the available data presented in this map however these should be treated with caution as expert opinion is that this is not the full distribution of the habitat.

How much of the current distribution of the habitat type lies within the EU 28?

This habitat occurs in the EU 28+ e.g. Norway, Channel Islands, Isle of Man. The percentage hosted by the EU 28 is likely to be between 85-90% but there is insufficient information to establish the exact figure.

Trends in quantity

The full extent and quantity of this habitat in the North East Atlantic region is unknown. Evidence of any trends in extent of occurrence is very sparse although there are limited data from a few long-term monitoring sites. One example is around the island of Lundy, UK, where some losses were reported following persistent gales. Populations of erect sponges in this location are also believed to have been depleted by museum collecting in the early 1970s.

- Average current trend in quantity (extent)
EU 28: Unknown
EU 28+: Unknown
- Does the habitat type have a small natural range following regression?

No

Justification

There is a lack of information on the distribution and abundance of this habitat in the North East Atlantic. However as it is known to occur in locations as widely separated as the Cantabrian shelf, the Formigas Bank in the Azores, the west coast of Ireland, the east coast of Shetland and the west and south coast of

the Outer Hebrides, it is not considered to have a small natural range.

- Does the habitat have a small natural range by reason of its intrinsically restricted area?

No

Justification

There is a lack of information on the distribution and abundance of this habitat in the North East Atlantic. However as it is known to occur in locations as widely separated as the Cantabrian shelf, the Formigas Bank, Azores, the west coast of Ireland, the east coast of Shetland and the west and south coast of the Outer Hebrides, it is not considered to have a small natural range.

Trends in quality

The extent of this habitat in the North East Atlantic region is unknown and there is insufficient information on any trends in quality to estimate any historical, current or future trends.

- Average current trend in quality

EU 28: Unknown

EU 28+: Unknown

Pressures and threats

The habitat is fragile and sensitive to direct physical disturbance from demersal fishing gear. This includes trawling, dredging, bottom set nets and potting. Smothering by suspended sediments which could result from fishing activity, dredge disposal or nearby construction are other potential threats. The collecting of sponge specimens for natural history studies and for biomedical purposes has also been identified as potential threats in some locations. Climate change may change the composition of species associated with this habitat in the future.

List of pressures and threats

Biological resource use other than agriculture & forestry

Fishing and harvesting aquatic resources

Professional passive fishing

Potting

Netting

Professional active fishing

Benthic or demersal trawling

Benthic dredging

Illegal taking/ removal of marine fauna

Removal for collection purposes

Climate change

Changes in biotic conditions

Migration of species (natural newcomers)

Conservation and management

This habitat is present within some Marine Protected Areas and in zones where the use of bottom trawling is prohibited (e.g. on the Cantabrian Shelf). There are some long term monitoring sites (e.g. Isles of Scilly, UK), however no conservation measures that specifically target this habitat have been identified.

List of conservation and management needs

Measures related to spatial planning

Establish protected areas/sites

Measures related to hunting, taking and fishing and species management

Regulation/Management of fishery in marine and brackish systems

Measures related to special resource use

Regulating/Managing exploitation of natural resources on sea

Conservation status

Annex 1:

1170: MATL U2, MMAC FV

When severely damaged, does the habitat retain the capacity to recover its typical character and functionality?

Little is known about the capacity of this habitat to recover when severely damaged however the presence of large, slow growing organisms may mean that full recovery from damage or loss of such individuals, could take many years. Warm shallow-water sponge species have shown rapid recovery from physical disturbance, yet it is thought that the slower growing, cold deep-water sponge species are much more susceptible to physical damage.

Little is known of the longevity and recruitment prospects for the sponges that characterise this habitat but evidence from monitoring studies at Lundy, England, suggests that growth of *Axinella dissimilis* (as *Axinella polypoides*) and *Homaxinella subdola* is no more than about 2 mm a year (the sponges grow to a height of up to about 300 mm) and that all branching sponges included in photographic monitoring over a period of four years exhibited very little or no growth in that time. Furthermore, no recruitment of sponges was observed. The predominance of erect sponges in this habitat is likely to mean that any decline in the occurrence of this habitat is likely to be permanent.

Effort required

Red List Assessment

Criterion A: Reduction in quantity

Criterion A	A1	A2a	A2b	A3
EU 28	unknown %	unknown %	unknown %	unknown %
EU 28+	unknown %	unknown %	unknown %	unknown %

There is insufficient information to determine any trends in quality of this habitat. This habitat has therefore been assessed as Data Deficient under criteria A for both the EU 28 and EU 28+.

Criterion B: Restricted geographic distribution

Criterion B	B1				B2				B3
	EOO	a	b	c	AOO	a	b	c	
EU 28	>50,000 Km ²	Unknown	Unknown	No	>50	Unknown	Unknown	No	No
EU 28+	>50,000 Km ²	Unknown	Unknown	No	>50	Unknown	Unknown	No	No

This habitat has a large natural range in the North East Atlantic region. The precise extent is unknown

however as EOO >50,000km² and AOO >50, this exceeds the thresholds for a threatened category on the basis of restricted geographic distribution. Trends are unknown. The distribution of the habitat is such that the identified threats are unlikely to affect all localities at once. This habitat has therefore been assessed as Least Concern under criteria B1(c) B2 (c) and B3 and Data Deficient for all other criteria.

Criterion C and D: Reduction in abiotic and/or biotic quality

Criteria C/D	C/D1		C/D2		C/D3	
	Extent affected	Relative severity	Extent affected	Relative severity	Extent affected	Relative severity
EU 28	unknown %	unknown %	unknown %	unknown %	unknown %	unknown %
EU 28+	unknown %	unknown %	unknown %	unknown %	unknown %	unknown %

Criterion C	C1		C2		C3	
	Extent affected	Relative severity	Extent affected	Relative severity	Extent affected	Relative severity
EU 28	unknown %	unknown %	unknown %	unknown %	unknown %	unknown %
EU 28+	unknown %	unknown %	unknown %	unknown %	unknown %	unknown %

Criterion D	D1		D2		D3	
	Extent affected	Relative severity	Extent affected	Relative severity	Extent affected	Relative severity
EU 28	unknown %	unknown%	unknown %	unknown%	unknown %	unknown%
EU 28+	unknown %	unknown%	unknown %	unknown%	unknown %	unknown%

Experts consider there to be insufficient data on which to assess criteria C/D.

Criterion E: Quantitative analysis to evaluate risk of habitat collapse

Criterion E	Probability of collapse
EU 28	unknown
EU 28+	unknown

There is no quantitative analysis available to estimate the probability of collapse of this habitat type.

Overall assessment "Balance sheet" for EU 28 and EU 28+

	A1	A2a	A2b	A3	B1	B2	B3	C/D1	C/D2	C/D3	C1	C2	C3	D1	D2	D3	E
EU28	DD	DD	DD	DD	LC	LC	LC	DD	DD	DD	DD	DD	DD	DD	DD	DD	DD
EU28+	DD	DD	DD	DD	LC	LC	LC	DD	DD	DD	DD	DD	DD	DD	DD	DD	DD

Overall Category & Criteria			
EU 28		EU 28+	
Red List Category	Red List Criteria	Red List Category	Red List Criteria
Data Deficient	-	Data Deficient	-

Confidence in the assessment

Low (mainly based on uncertain or indirect information, inferred and suspected data values, and/or limited expert knowledge)

Assessors

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Contributors

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Reviewers

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Date of assessment

17/08/2015

Date of review

15/01/2016

References

- Bell, J.J. 2008. The functional role of marine sponges. *Estuarine, Coastal and Shelf Science* 79: 341-353.
- Connor, D.W., Allen, J.H., Golding, N. *et al.* 2004. The Marine Habitat Classification for Britain and Ireland Version 04.05 JNCC. [online] Peterborough: ISBN 1 861 07561 8. Available at: http://jncc.defra.gov.uk/pdf/04_05_introduction.pdf. (Accessed: 30/08/2014).
- European Environment Agency. 2014. EUNIS habitat type hierarchical view. Available at: <http://eunis.eea.europa.eu/habitats-code-browser.jsp>. (Accessed: 22/08/2014).
- Freese, J.L. 2001. Trawl-induced damage to sponges observed from a research submersible. *Marine Fisheries Review* 63: 7-13.
- Gall, A. 2011. *Marine Biodiversity Action Plan habitats and species of the Isles of Scilly. An update to the Isles of Scilly Biodiversity Audit 2008*. Nature England. Available at: http://www.dassh.ac.uk/dataDelivery/filestore/1/1/6/8/1_96e3efc5c9f3d82/metadump.xml. (Accessed: 13/11/2015).
- Hartnoll, R.G. 1998. *Volume VIII. Circalittoral faunal turf biotopes*. Scottish Association of Marine Sciences. Oban: UK Marine SAC Project.
- Hiscock, K., Southward, A., Tittley, I. and Hawkins, S. 2004. Effects of changing temperature on benthic marine life in Britain and Ireland. *Aquatic Conservation: Marine and Freshwater Ecosystems* 14: 333-362.
- Hoffman, F., Tore Rapp, H., Zöller, T. and Reitner, J. 2003. Growth and regeneration in cultivated fragments of the boreal deep water sponge *Geodia barretti* Bowerbank, 1858 (Geodiidae, Tetractinellida, Demospongiae). *Journal of Biotechnology* 100: 109-118.
- Lancaster, J. (Ed.), McCallum, S., Lowe, A.C., Taylor, E., Chapman, A. and Pomfret, J. 2014. *Development of detailed ecological guidance to support the application of the Scottish MPA selection guidelines in Scotland's seas*. Inverness: Scottish Natural Heritage Commissioned Report No.491. Deep Sponge Communities – supplementary document.
- OCEANA. 2011. OSPAR workshop on the improvement of the definitions of habitats on the OSPAR list. Background document for discussion: "Coral gardens", "Deep sea sponge aggregations" and "seapen and burrowing megafauna communities". Bergen: OSPAR. Available at: http://oceana.org/sites/default/files/reports/OCEANA_OSPARworkshopdefinitionshabitats_October2011_Bergen_FINAL.pdf. (Accessed: 12/12/2015).

Tempera, F., Atchoi, E., Amorim, P., Gomes-Pereira, J., and Gonçalves, J. 2013. *Atlantic Area Marine Habitats. Adding new Macaronesian habitat types from the Azores to the EUNIS Habitat Classification*. Horta: MeshAtlantic, IMAR/DOP-UAç, p.126.

Wassenberg, T.J., Dews, G. and Cook, D. 2002. The impact of fish trawls on megabenthos (sponges) on the north-west shelf of Australia. *Fisheries Research* 58: 141-151.